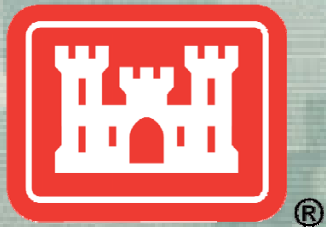


Lake Winnebago Regulation Meeting

USACE Detroit District

October 30, 2013



Agenda

- **Government Shutdown Impacts**
- **Basin Overview**
- **Major Stakeholders**
- **Maintenance and Repair Work**
- **Weather Conditions**
- **2012-2013 Water Level Explanation**
- **2013-2014 Water Level Strategy**
- **Open Discussion/Questions**



Government Shutdown

Impacts to Lake Winnebago Regulation and Lower Fox River Operations

- Health, safety and welfare of our stakeholders is paramount
- Dam operations at control structures and downstream on Lower Fox River continued
- Chief of Engineering and Technical Services (ETS) assumed regulation duties with support from designated staff at Fox River Satellite Office
- Year round gage maintenance and verification program provided automated data allowing operations to continue
- Data availability via district website and alternate sources provided support for regulation decisions



Fox-Wolf River Basin



Drainage Area

Basin = 6,430 mi²

Lake Winnebago = 206 mi²



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Lake Winnebago Controls

Little Lake Butte Des Morts

Menasha Dam
6 Tainter Gates

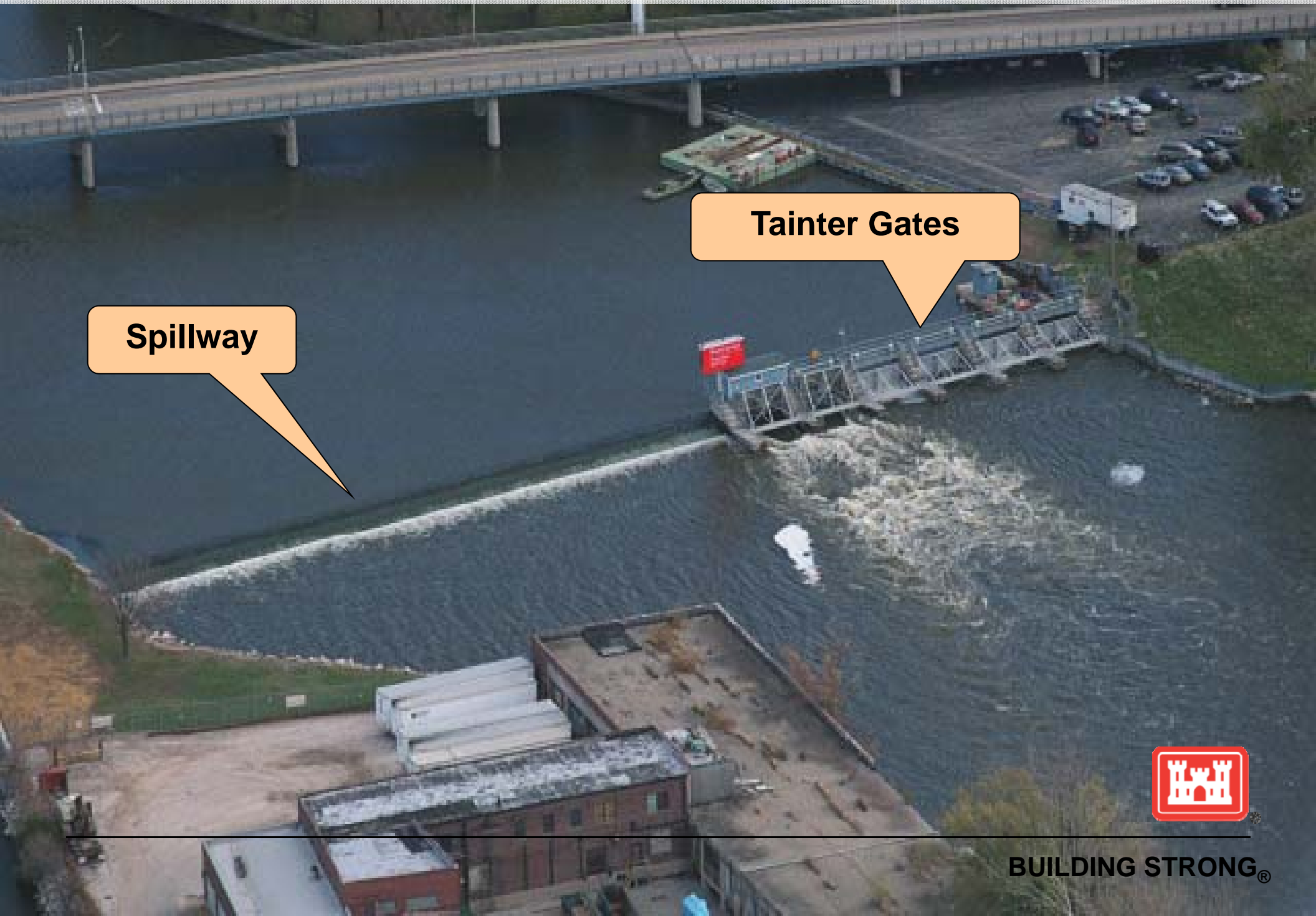
Neenah Dam
9 Needle Gates
5 Tainter Gates

Lake Winnebago



BUILDING STRONG®

Menasha Dam



Spillway

Tainter Gates



BUILDING STRONG®

Neenah Dam

Spillway

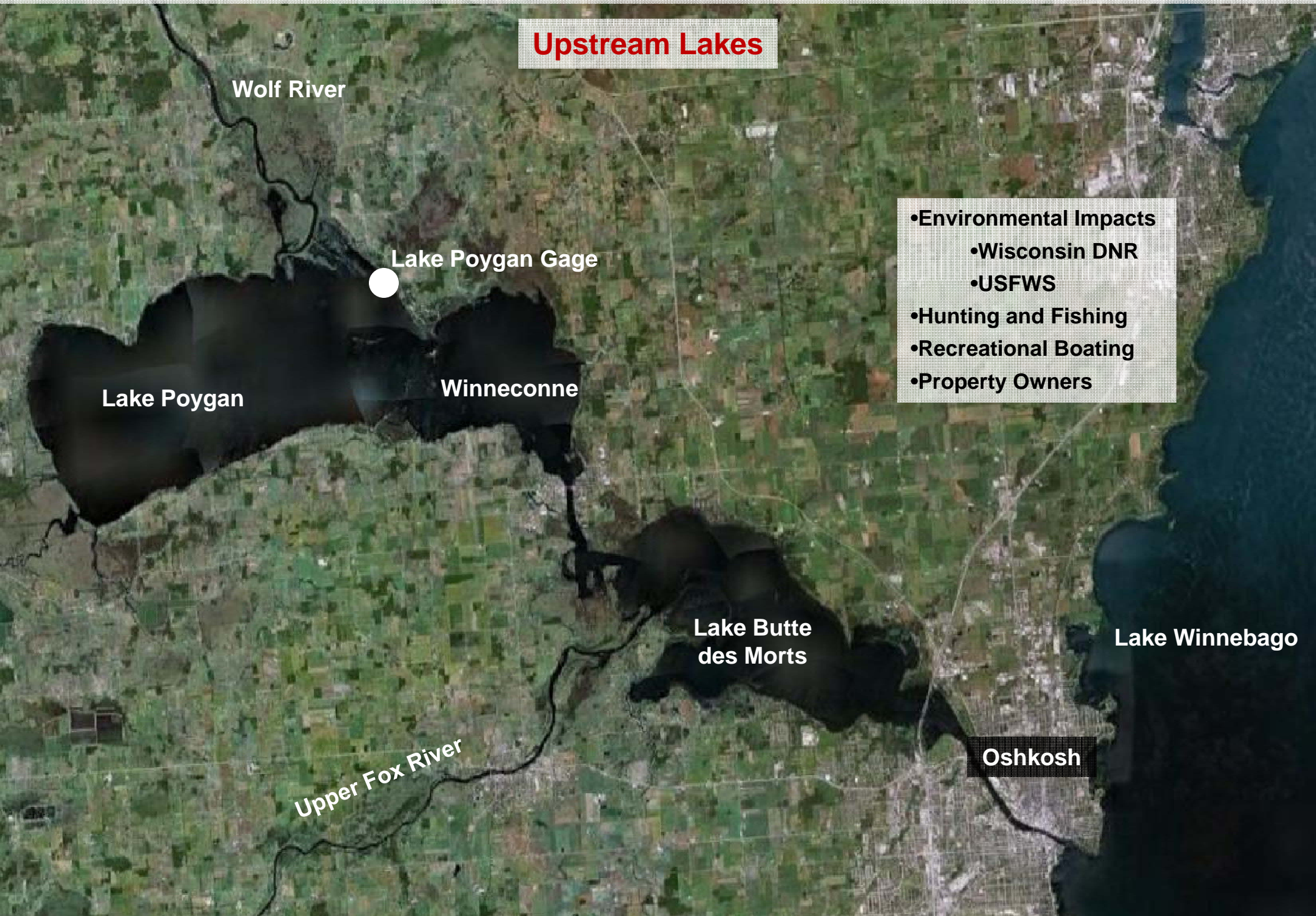
Tainter Gates

Needle Gates



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Major Stakeholders



Upstream Lakes

Wolf River

Lake Poygan Gage

Lake Poygan

Winneconne

- Environmental Impacts
- Wisconsin DNR
- USFWS
- Hunting and Fishing
- Recreational Boating
- Property Owners

Lake Butte
des Morts

Lake Winnebago

Oshkosh

Upper Fox River

Major Stakeholders

Neenah Pool



Menasha Pool



- Neenah Water Treatment Plant
- Neenah-Menasha Wastewater Treatment Plant
- Kimberly-Clark Neenah Paper Division
- Menasha Water Treatment Plant
- Menasha Utilities
- SCA Tissue North America
- Sonoco U.S. Paper Mills, Inc.
- Property Owners

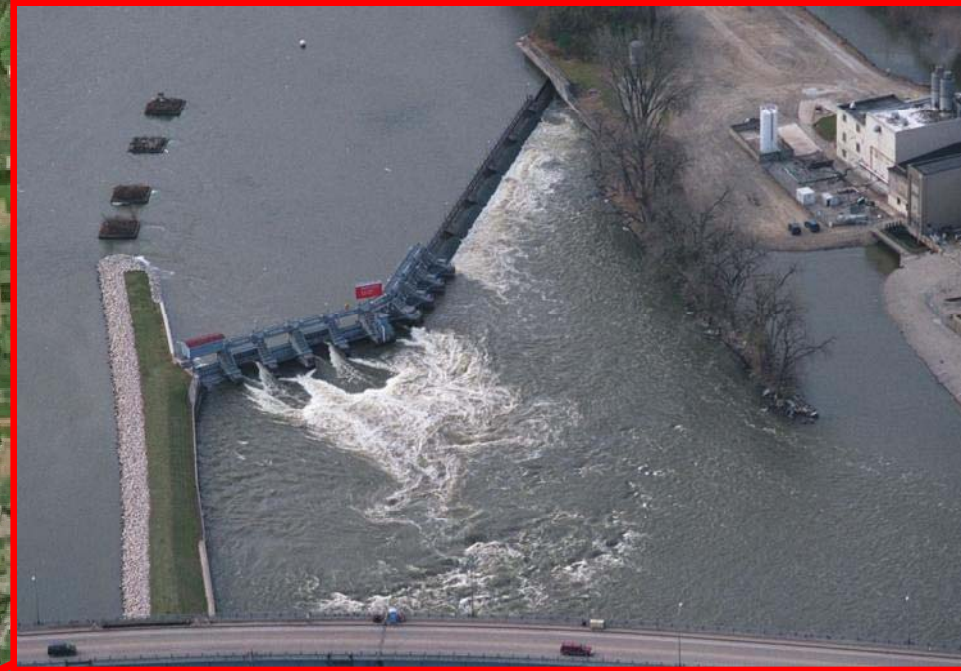
- City of Oshkosh
- George A. Whiting Paper Co.
- Environmental Impacts
- Hunting and Fishing
- Property Owner Impacts
- Recreational Boating
- Neenah Boat and Dock Club
- Neenah Nodaway Yacht Club
- South Side Ice Yacht Club
- Fond du Lac Yacht Club

Major Stakeholders of the Fox River

Upper Appleton Pool



Lower Appleton Pool



- Property Owners
- Little Lake Butte des Morts
- We Energies
- Neenah Paper
- North American Hydro
- Kaukauna Utilities
- Badger State Games
- Recreational Boating
- Appleton Yacht Club

Major Stakeholders of the Fox River

Cedars Pool



- Appleton Wastewater Treatment Plant
- Kaukauna Utilities
- Property Owners



Google
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Image © 2012 TerraMetrics

44°21'18.81" N 88°13'48.61" W elev 0 ft

Eye alt 27.20 mi

Imagery Date: 7/24/2011

Major Stakeholders of the Fox River

Little Chute Pool



- Kaukauna Utilities
- Circle Acres Park
- Village of Little Chute
- Property Owners

Major Stakeholders of the Fox River

Kaukauna Pool



- Heart of the Valley Metropolitan Sewerage Commission
- Expera Specialty Solutions
- Kaukauna Utilities
 - Kayaking Interests
 - Walleye Spawning
- Property Owners



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Image © 2012 TerraMetrics

Major Stakeholders of the Fox River

Rapide Croche Pool



- Kaukauna Utilities
- Expera Specialty Solutions
- Property Owners

©2010 Google

Image © 2012 TerraMetrics

Major Stakeholders of the Fox River

Little Kaukauna Pool



- Wrightstown Wastewater Treatment Plant
- Bass Spawning (USFWS)
- Duck Hunting
- Recreational Boating
- Water Board Warriors
- Property Owners

Major Stakeholders of the Fox River

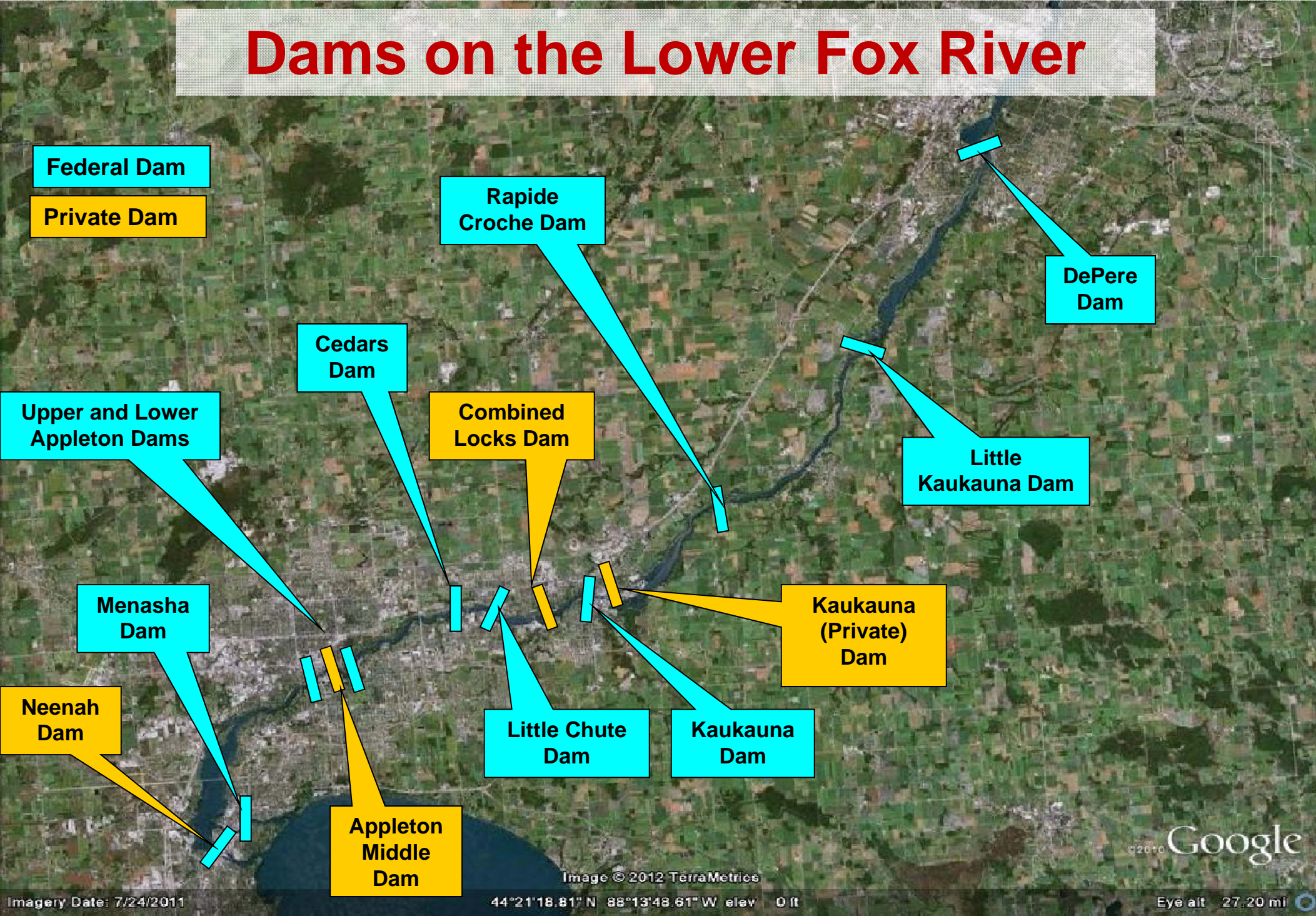
De Pere Pool



- Sturgeon Spawning
- USFWS
- Expera Specialty Solutions
- Recreational Boating
- Property Owners
- City of De Pere

Major Stakeholders of the Fox River

Dams on the Lower Fox River



Major Stakeholders of the Fox River

Locks on the Lower Fox River

Closed

**Restoration
Completed**

**Rapide
Croche Boat
Lift**

**De Pere
Lock**

**Cedars
Lock**

**Combined
Locks Lock**

**Appleton
Locks (4)**

**Little
Kaukauna
Lock**

**Menasha
Lock**

Kaukauna Locks
1 completed
4 under construction

**Little Chute
Lock**

©2010 Google

Image © 2012 TerraMetrics

44°21'18.81" N 88°13'48.61" W elev 0 ft

Eye alt 27.20 mi

Imagery Date: 7/24/2011

Lower Fox River Partnering Meeting

August 9, 2013

➤ Year In Review

➤ Low flows

- Need stability and consistency
- issues at Expera Specialty Solutions in July

➤ High flows

- Flows greater than 15,300 cfs adversely affect Expera Property Solutions property in Kaukauna

➤ Construction Projects / Maintenance

- We Energies
- Kaukauna Utilities

➤ Sturgeon Spawning at De Pere

- USACE will continue e-mail and/or conference calls to address issues during high and low flow periods.



Maintenance and Repair Work

Kaukauna Utilities Hydropower Improvements



Maintenance and Repair Work

Expera Specialty Solutions Spillway Construction at De Pere



Gate Automation



- Stricter security requirements
- T1 hardline installations nearly complete



Seasonal Issues

Ice Shoves

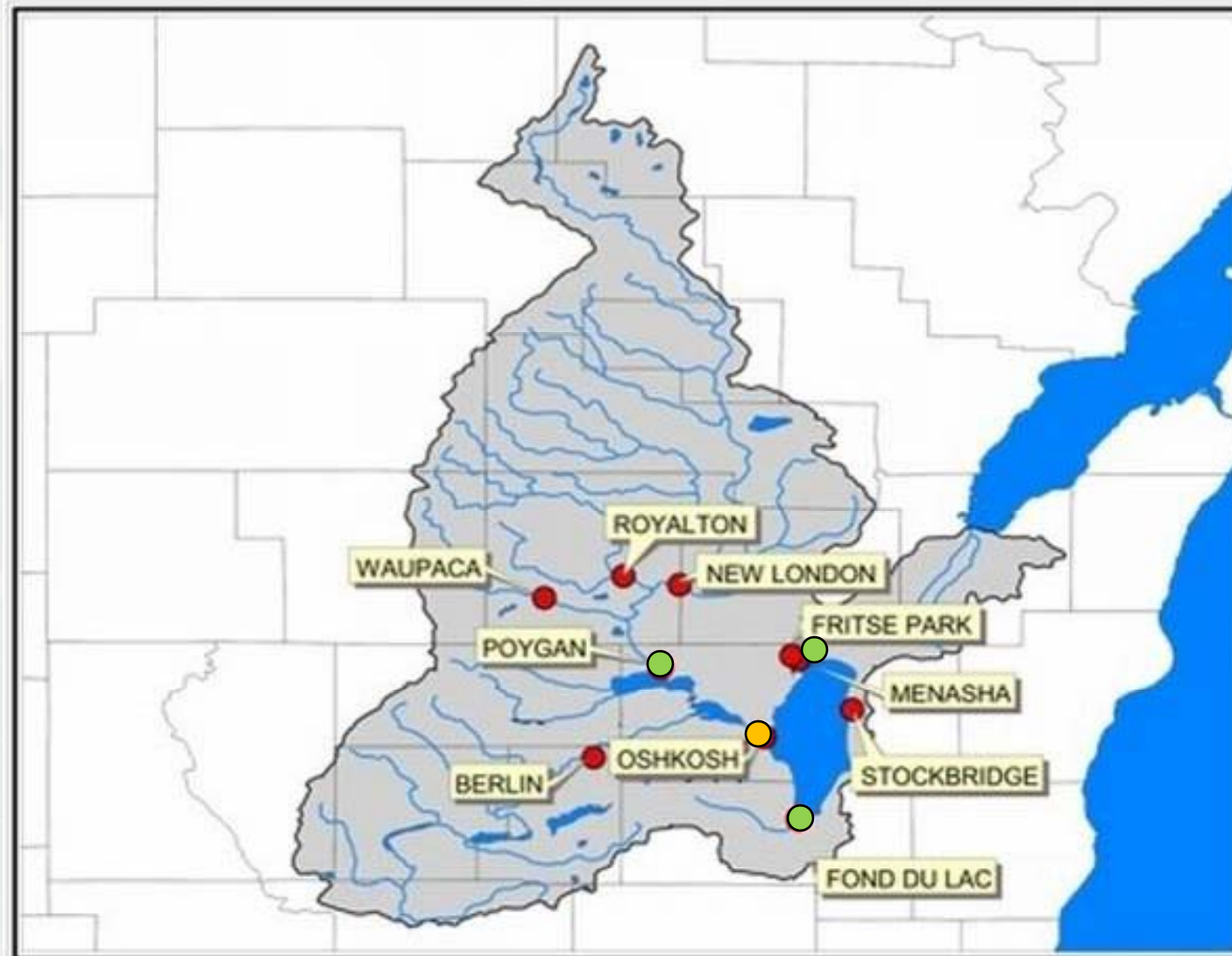


Picture taken in Oshkosh April 11, 2013
(shortly before ice out)



Gage Maintenance and Verification

Data Collection Sites



20 0 20 40 Miles

Scale



Gage Maintenance and Verification

Lake Poygan Gage



- Staff board and shaft encoder read 2.87 feet; gage is verified
- If staff board and shaft encoder differ by more than $\pm .05$ ft, shaft encoder is reset
 - Verifications are done monthly



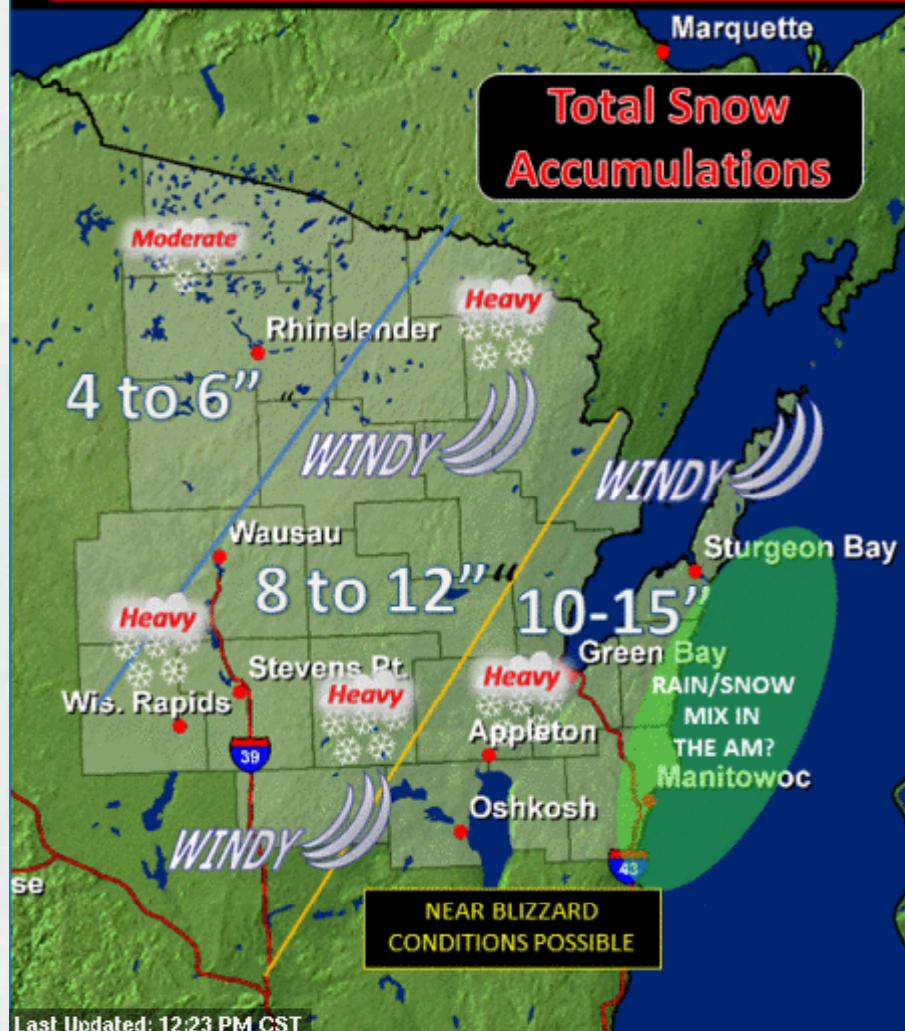
2012-2013 Weather



BUILDING STRONG®

Let It Snow!

Major Winter Storm Arrives Late Tonight...



TIMELINE

- SNOW TO OVERSPREAD AREA AFTER MIDNIGHT
 - BECOMING HEAVY BY MORNING
 - POSSIBLE RAIN AND SLEET MIX ALONG LAKESHORE THURSDAY MORNING
- SNOW WILL CONTINUE THROUGH THURSDAY...TAPERING OFF THURSDAY EVENING
- STRONG NW WINDS TO DEVELOP LATE THURSDAY MORNING WILL CONTINUE INTO FRIDAY MORNING CAUSING BLOWING AND DRIFTING SNOW TO CONTINUE AFTER SNOW DIMINISHES

IMPACTS

- TRAVEL WILL BECOME EXTREMELY DIFFICULT THURSDAY MORNING
- STRONG WINDS AND HEAVY SNOW WILL CAUSE LOCAL BLIZZARD CONDITIONS WITH NEAR ZERO VISIBILITIES AT TIMES
- HEAVY WET SNOW COMBINED WITH STRONG WINDS COULD CAUSE SCATTERED POWER OUTAGES
- CONSIDERABLE BLOWING AND DRIFTING SNOW IS EXPECTED

PLEASE MONITOR FORECAST UPDATES AND LOCAL ALERTS FOR THIS POTENTIALLY DANGEROUS STORM

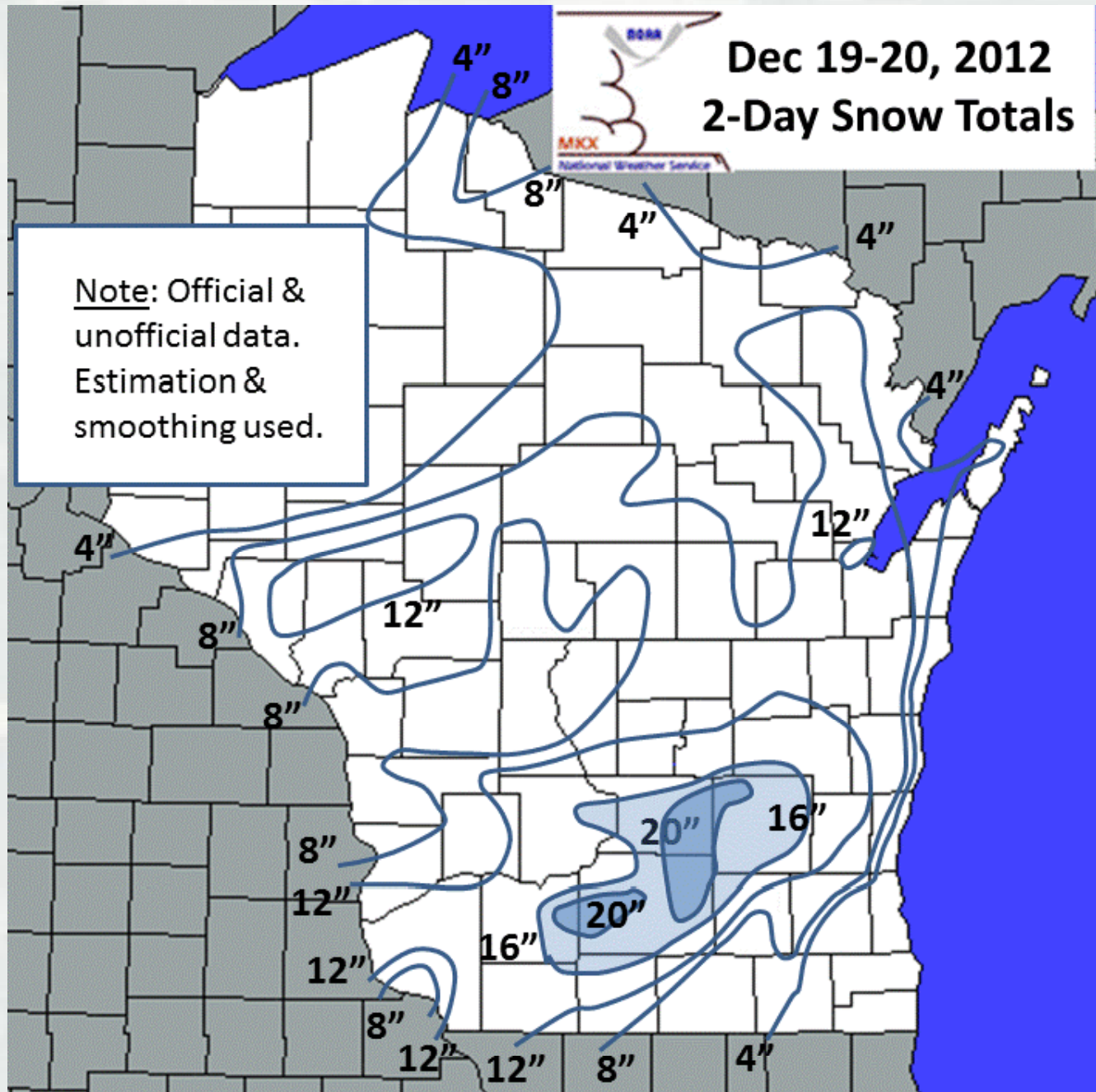


Wednesday, December 19, 2012

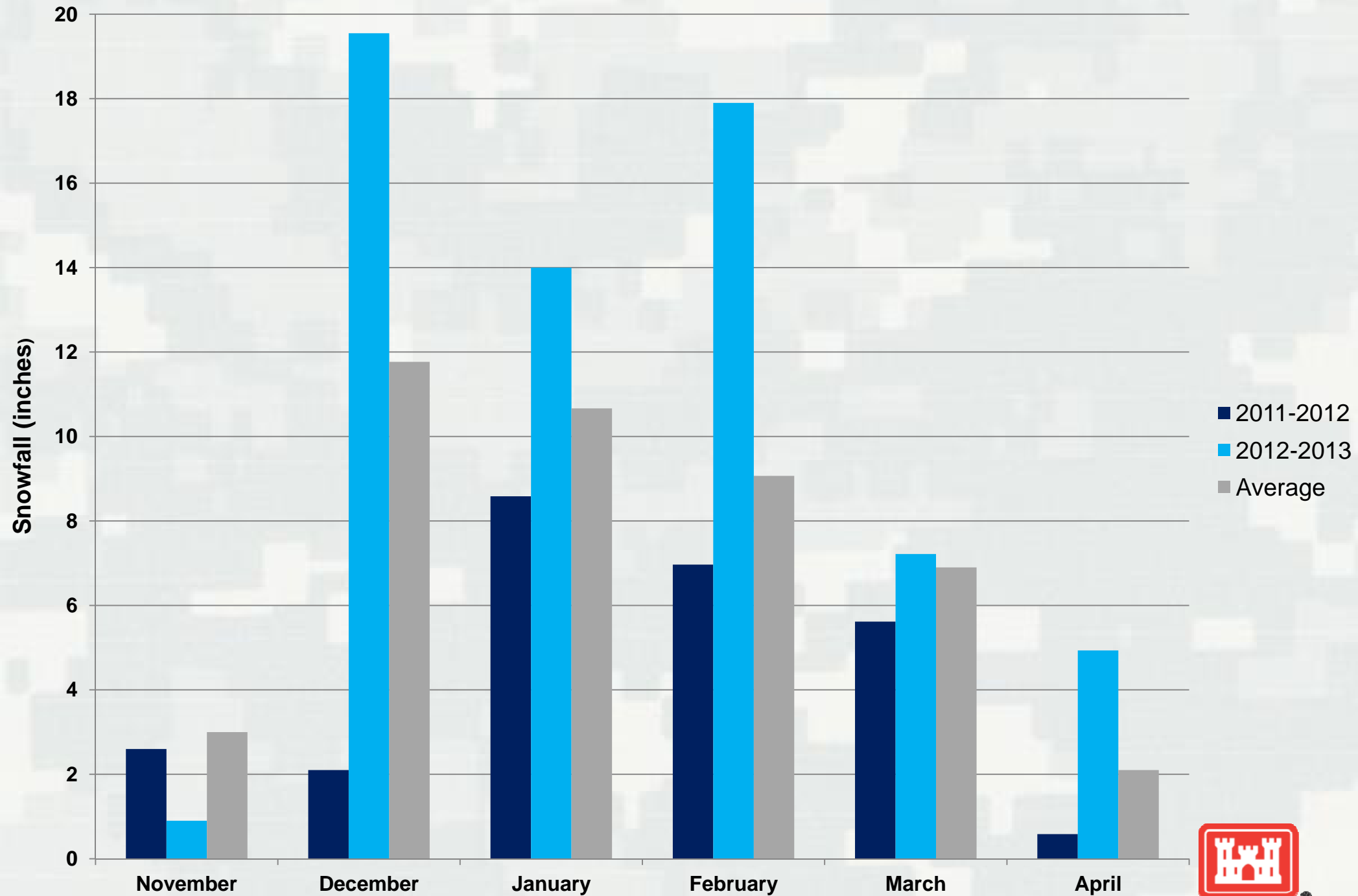
National Weather Service - Green Bay, Wisconsin



Let It Snow!

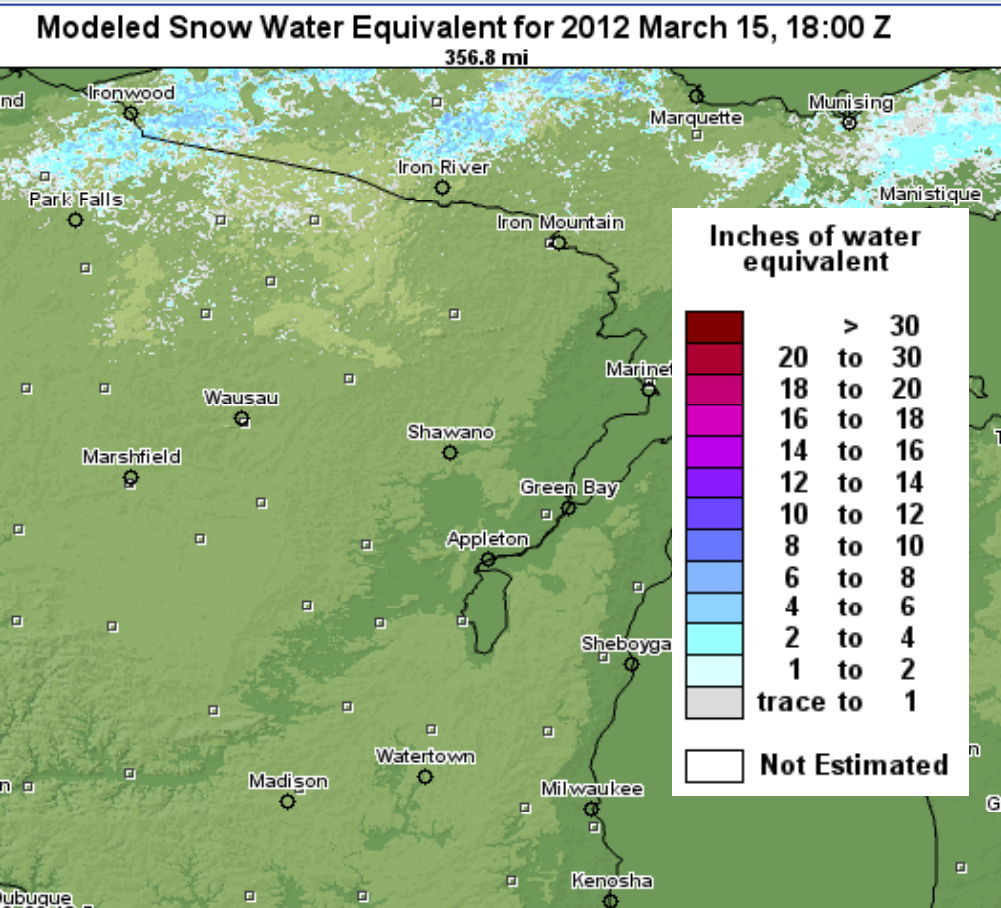


Lake Winnebago Basin Snowfall

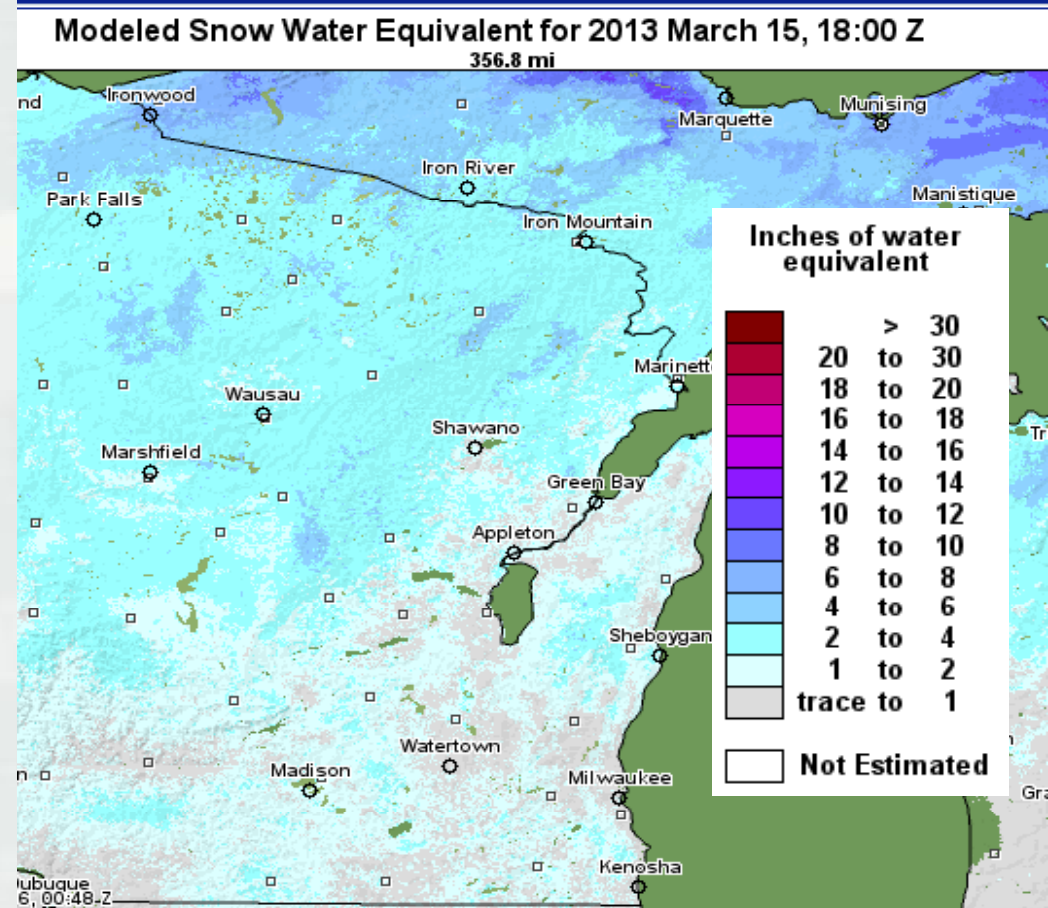


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Snow Water Equivalent (SWE)



March 15, 2012
No snowpack

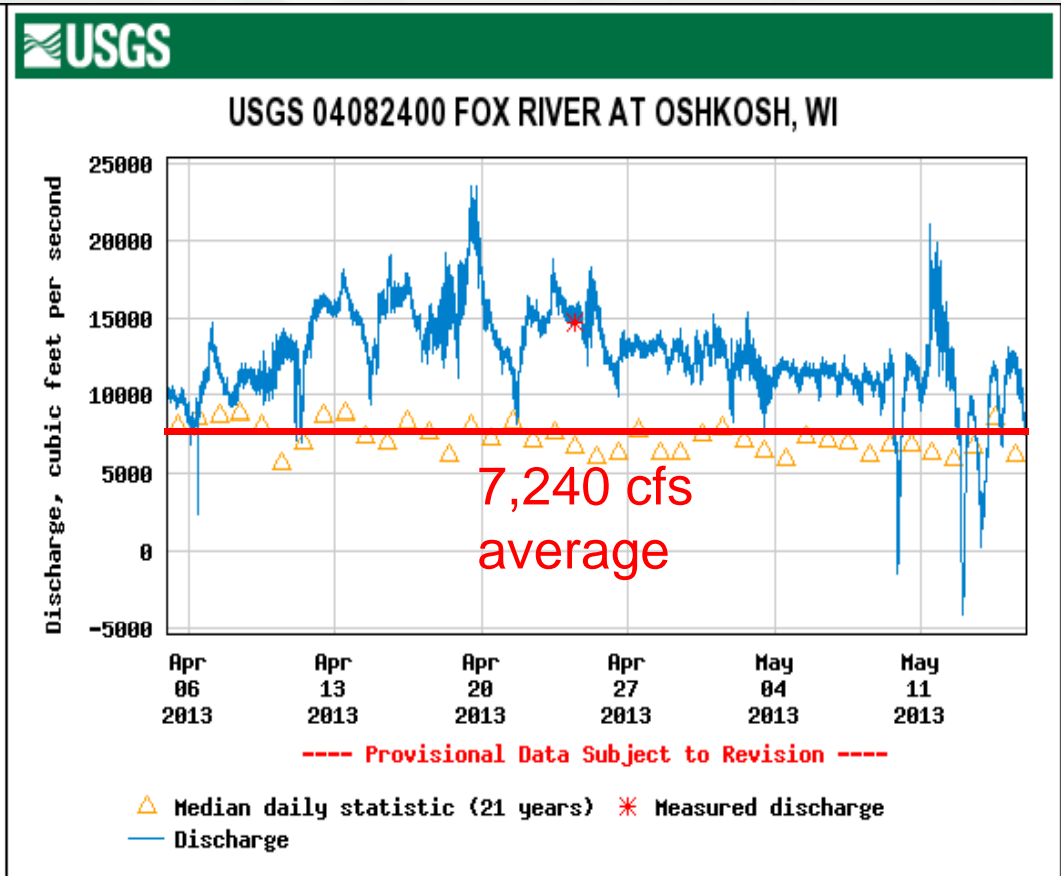
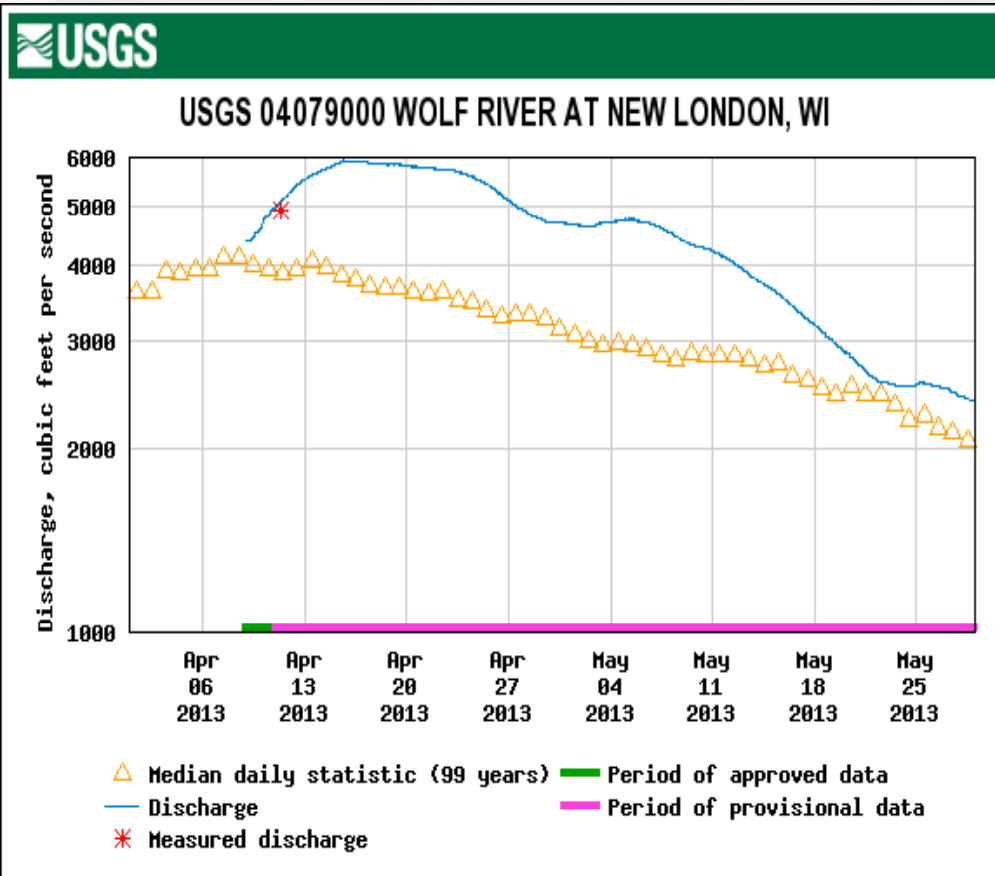


March 15, 2013
Several inches basin wide



SWE Impacts on Levels and Flows

- 1-2" of rain on a snowpack with 2-4" of SWE equals high inflows
- Due to the size of the Fox-Wolf River Winnebago basin, high inflows persist for weeks
- Lake Winnebago peaked at 3.07 ft on April 20.



Lake Winnebago Ice Out

April 05, 2013



April 16, 2013

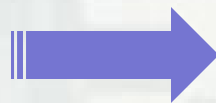


April 20, 2013



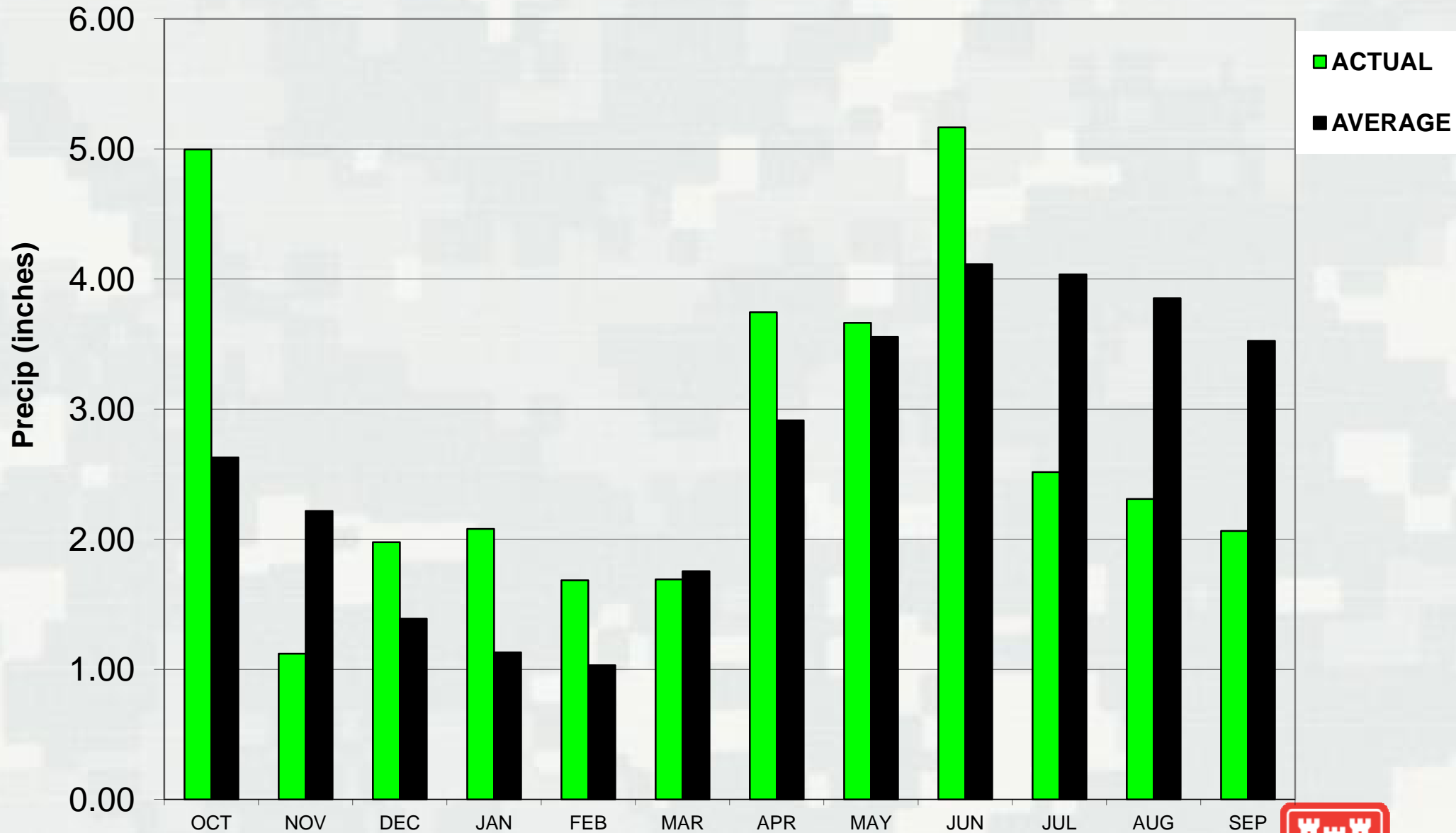
Previous Ice Out
dates:

- April 20, 2013 • April 11, 2009
- March 18, 2012 • April 14, 2008
- April 17, 2011 • March 29, 2007
- March 29, 2010 • March 30, 2006

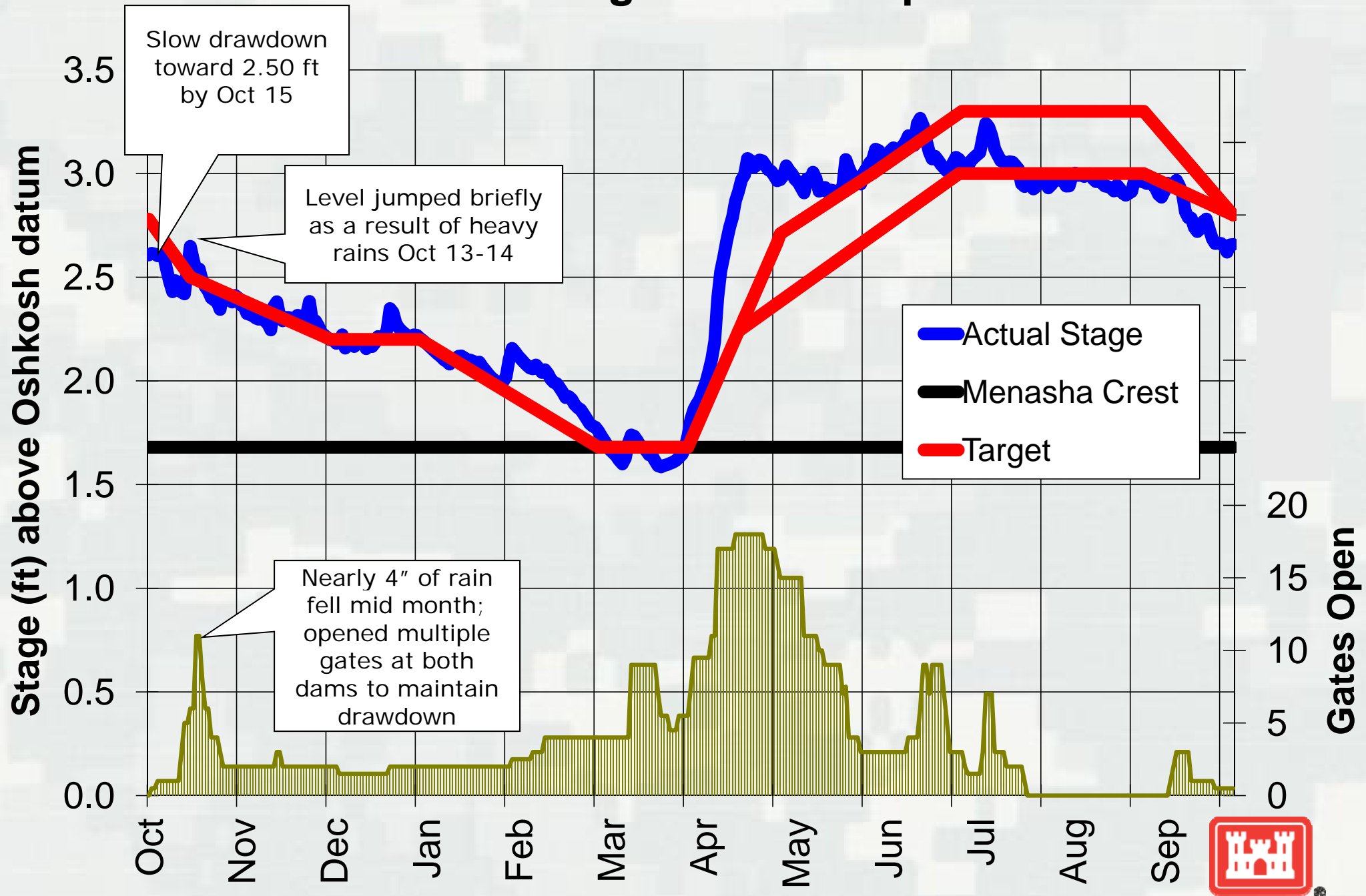


2013 had the latest ice out in recent years.
Temperatures in March and April were below
normal allowing the ice to remain on the lake
longer.

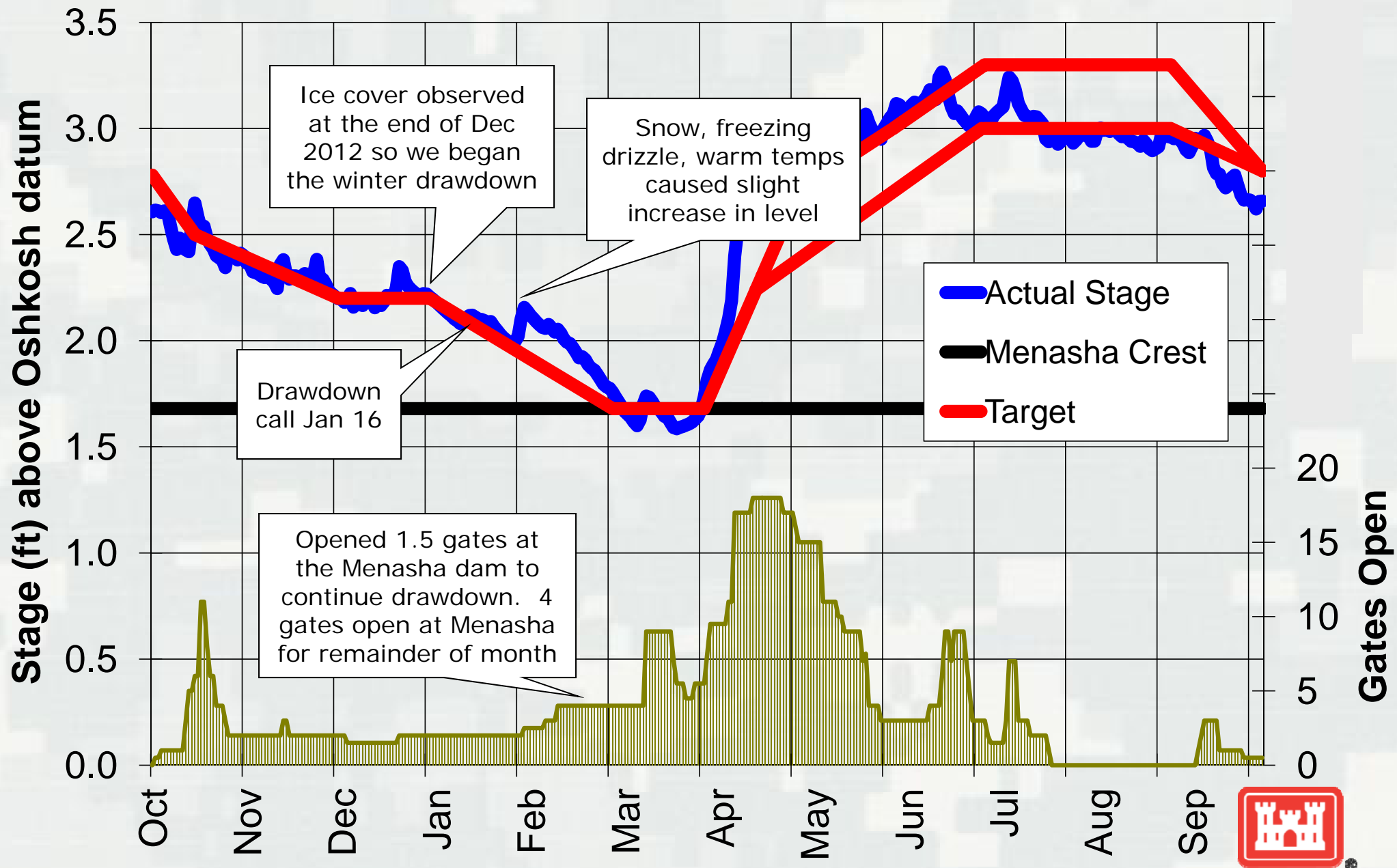
2012-2013 Lake Winnebago Basin-Wide Precipitation



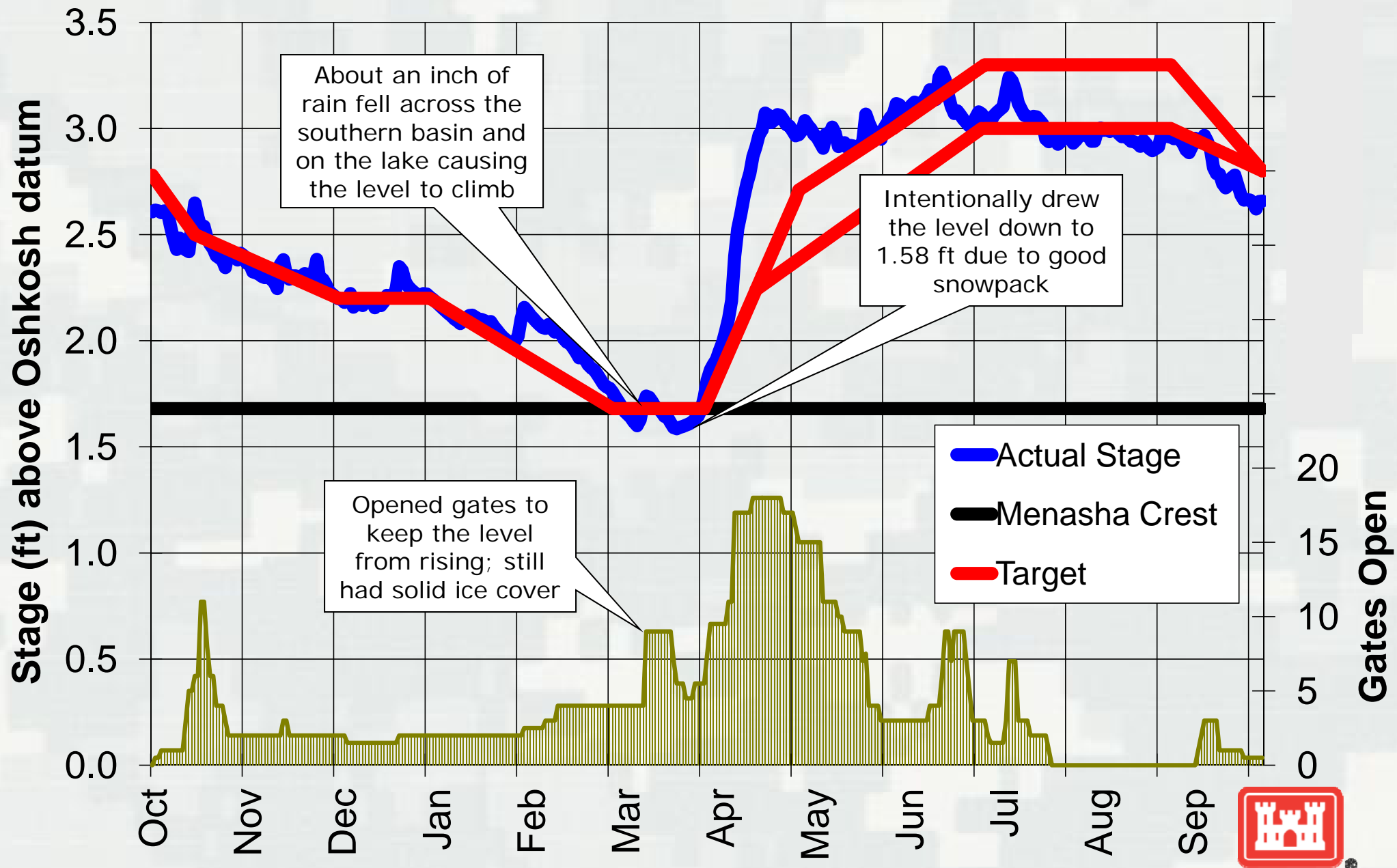
2012-2013 Stage with # of Open Gates



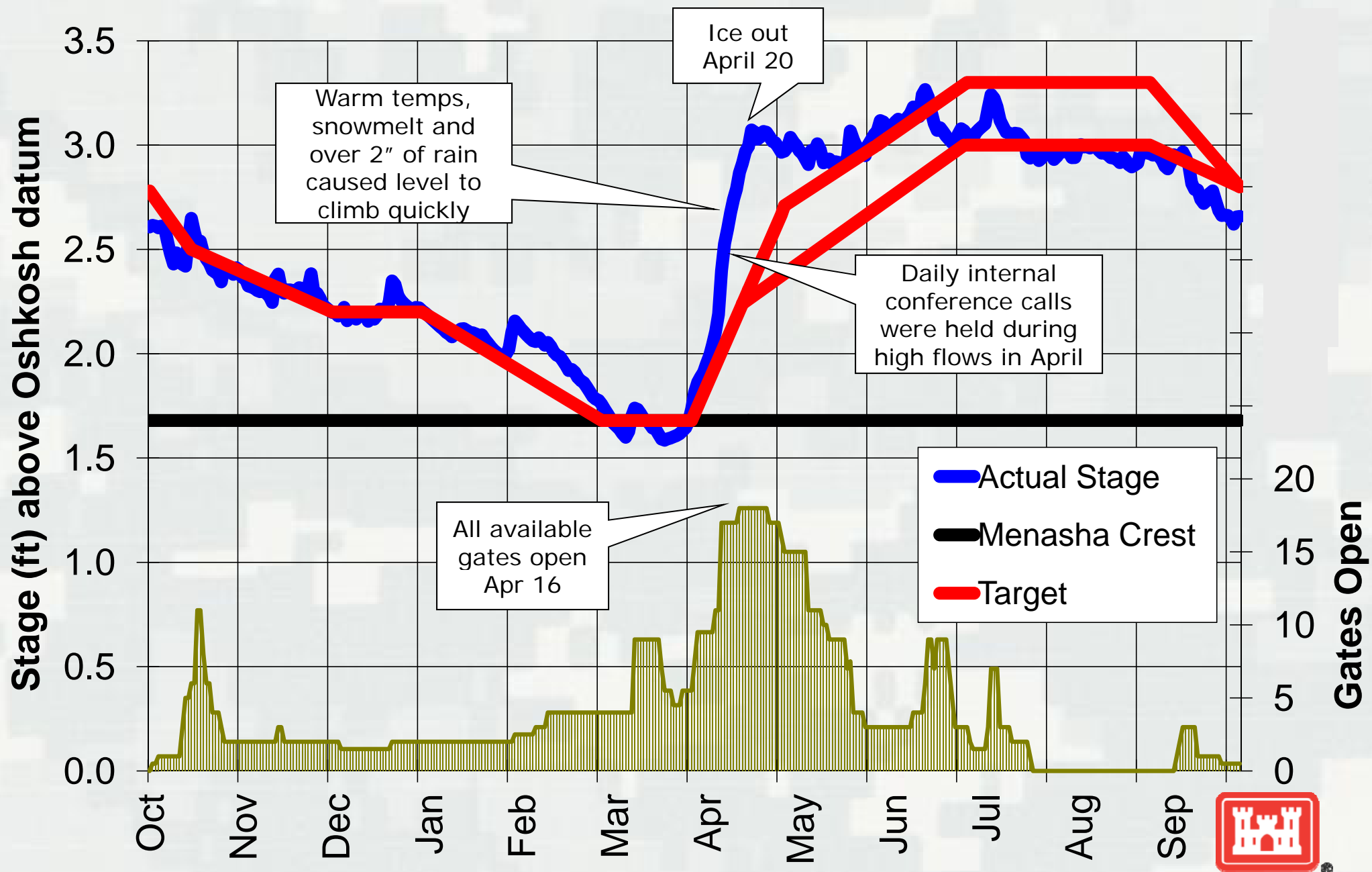
2012-2013 Stage with # of Open Gates



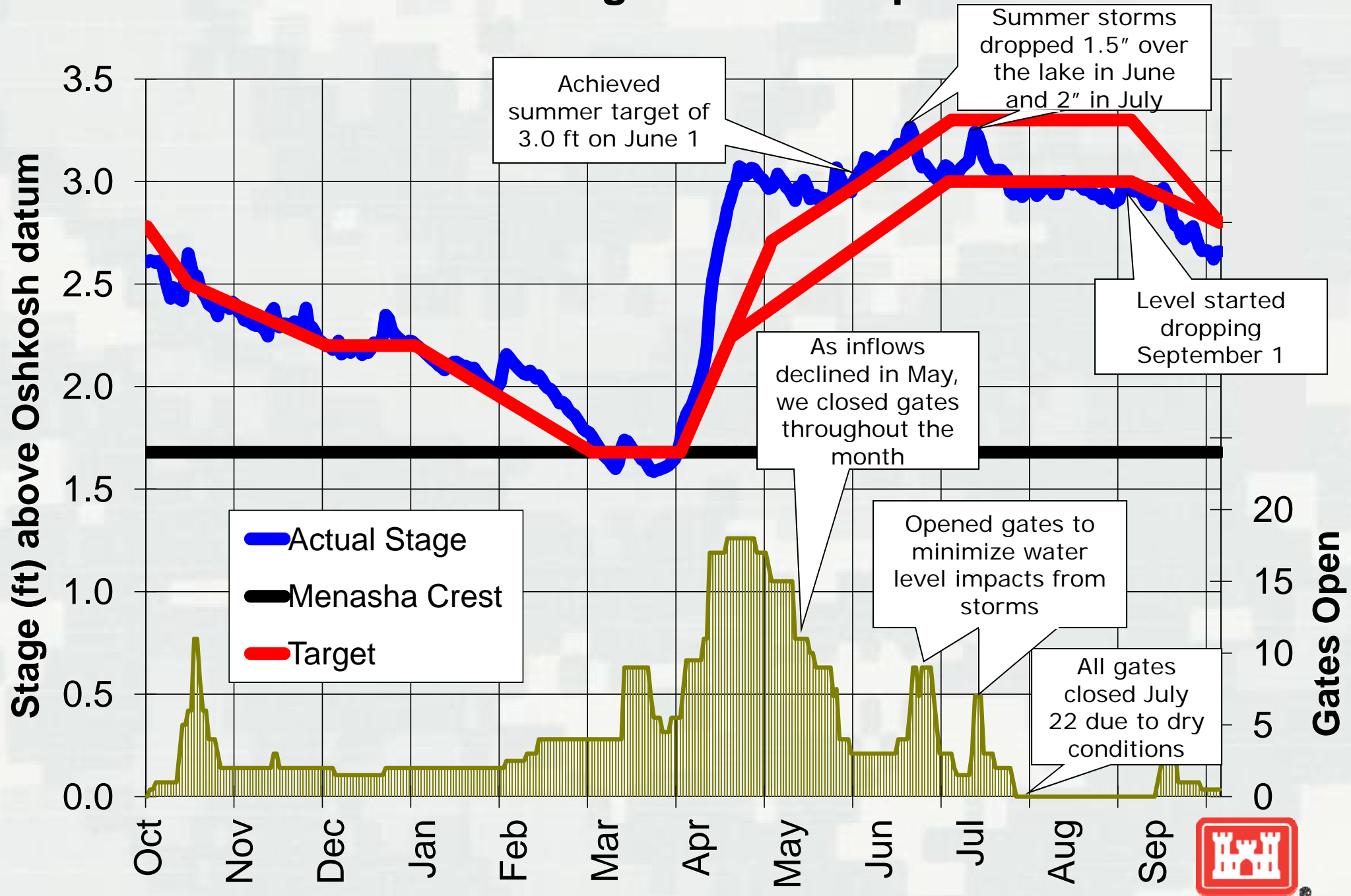
2012-2013 Stage with # of Open Gates



2012-2013 Stage with # of Open Gates



2012-2013 Stage with # of Open Gates

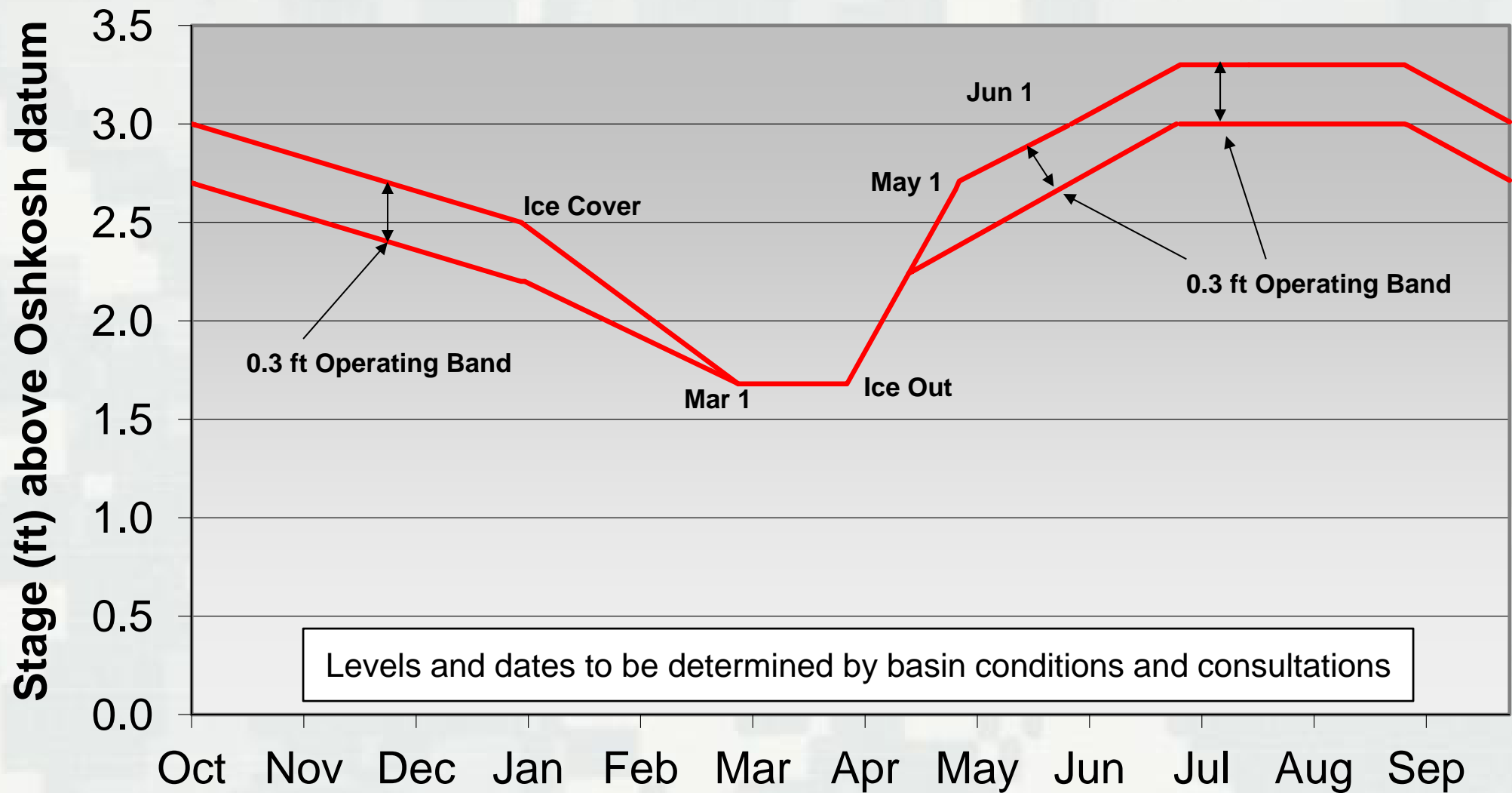


Current Conditions

Lake Winnebago	
Level	2.27 ft
Next Target	2.20 ft , Dec 1
Gate Setting	1.5 Menasha, 0 Neenah
Inflows	2,570 cfs
Outflows	2,570 cfs



Proposed 2013-2014 Target Water Levels



http://www.lre.usace.army.mil/Missions/GreatLakesInformation/LakeWinnebago.aspx

army.mil/Missions/GreatLakesInfc

Lake Winnebago Information

Help



US Army Corps of Engineers

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Lake Winnebago

Important Notices

- [Click here for the Lake Winnebago Current Conditions Update.](#)
- [Click here for the 2013 Lake Winnebago Regulation Meeting notice.](#)
- [Click here for the 2012 Lake Winnebago regulation meeting presentation.](#)
- [Click here for the 2012 Lake Winnebago regulation meeting minutes.](#)
- [Click here for the Revised Lake Winnebago Facts Book.](#)

Lake Winnebago Levels and Flows

Levels and Flows

[Today's Hourly Data](#)

[Yesterday's Hourly Data](#)

[This Month's Daily Data](#)

[Last Months Daily Data](#)

Historical Data

[Water Levels for the Last 2 Months - Graph or Table](#)

[River Stages for the Last 2 Days](#)

[30 Day Graphical Summary of Levels and Flows](#)

Lower Fox River Pool Elevations

QUESTIONS?



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